

## EDITORIAL

## PHYSIOLOGY IS A COMPLETE SUBJECT IN ITS OWN RIGHT

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Physiology is a branch of biology. It is the study of functions of the living matter. Living matter on earth is present in three forms, i.e., plants, animals and microbes. So physiology may be plant physiology, animal physiology and microbial physiology.<sup>1</sup> The oldest branch of Physiology is human physiology. Hippocrates, the father of medicine, was possibly the first physiologist around 420 BC. When scientific methods of observation and experimentation were used to study the movement of blood in the body, in the 17<sup>th</sup> century, that was the dawn of modern physiology.<sup>2</sup> One branch of human physiology is medical physiology which deals with the understanding and treatment of human diseases. Other branches of human physiology are sports physiology, space and aviation physiology, foetal or developmental physiology, environmental physiology, integrative physiology, practical physiology and comparative physiology.<sup>3</sup> Each branch may further be divided into many subdivisions.

The history of physiology is as old as the Greek natural philosophy. The study of anatomy revealed functions, i.e., physiology. Physiology is study of functions of cells, tissues, organs, systems, to the whole organism.<sup>4</sup>

A prominent Muslim scientist and physician Abu Bakar Al-Razi in the 8<sup>th</sup> century AD described some key physiological principles of human body. Another Muslim scientist Al-Kindi wrote a paper on human physiology. In the 17<sup>th</sup> century, William Harvey described the human blood circulation, with this the new era of experimental physiology started. Another prominent figure in the history of physiology is Herman Boerhaave. He is often called the father of physiology. He was a teacher of physiology and also wrote a book named '*Institutiones Medicae*'.<sup>5</sup>

In medical schools, different teaching methodologies are being used to teach physiology. These methods place physiology at different levels of importance in their curricula. Physiology in some schools is taught in a traditional and systematic manner while in others it is diluted in a way that physiology becomes unidentifiable in the whole curriculum. Setting aside the teaching methodology, important point is to ensure that the students are provided the basic principles and concepts of physiology at appropriate depth of understanding.<sup>6</sup> In context of our country, multiple teaching methodologies should be encouraged. A flexible implementation programme should allow the constraints of staff, faculty and resources.<sup>7</sup>

A great many number of students find it 'hard' to learn physiology. In a survey, physiology teachers reported that the students are not learning physiology at the level that their teachers expect. Many teachers discovered that students need help of their teachers to master concepts that would have been easily mastered. Howard Kutchai reported that over the years, first-year medical students have diminishing ability to understand physiology. Physiology teachers believe that the nature of the physiology subject and the students' effort to learn physiology are the most important determinants of physiology being hard.<sup>8</sup>

In Pakistan, currently we are facing a great dearth of physiology teachers and there is a tendency to teach physiology by non-physiologists in medical schools. We, the physiologists, should emphasize that physiology is a complete subject in its own right and should be taught by a physiologist. Allowing non-physiologists to teach physiology is just like promoting quackery in the field of medicine.

Future of physiology lies in research studies conducted by the physiologists. A unique strength of physiologists is that they make use of the latest technological and conceptual advances. The latest concepts and techniques in cellular and molecular biology are increasingly being used by physiologists as part of their research tools. The research goal of physiologists should be to solve problems of human interest, and they can use molecular and cell biological techniques as the means rather than the end. Although molecular biologists have a reductionistic approach, many of them are becoming increasingly aware of the need to apply their knowledge to elucidate physiological phenomena. It is only through this approach that the significance of physiology is established.<sup>9</sup>

Physiology is the scientific background of medicine and is not only providing a strong base to the medical or life sciences but it is also playing a significant role in developing a more scientific reasoning in the society. Physiology defines the boundary between quackery and the scientific medicine. Physiologists should be proud of being physiologists because there is no medicine without physiology. Physiology broadens the vision and enlightens the minds of its learners towards life. It produces a more logical thinking about life processes and so helps to ward off superstitions from the society. We recommend that physiology may be included in the curricula of secondary, intermediate and undergraduate levels as an optional subject.<sup>10</sup>

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